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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/739,456

12/17/2003

Dae-Woo Son

9903-068

9321

20575

7590

03/16/2006

MARGER JOHNSON & MCCOLLOM, P.C.  
210 SW MORRISON STREET, SUITE 400  
PORTLAND, OR 97204

EXAMINER

OWENS, DOUGLAS W

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 03/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

EJK

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/739,456	SON ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Douglas W. Owens	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21-33, 38 and 39 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-19 and 34-37 is/are rejected.
- 7) ☐ Claim(s) 5 and 20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>1/3/06</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Objections*

1. Claim 10 is objected to because of the following informalities: In line 3, "500" should be replaced with --500μ--. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 – 4, 6 – 9, 15 – 19, 34 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 6,037,662 to Yoon et al.

Regarding claim 1, Yoon et al. teach a tape circuit substrate (Fig. 4, for example), comprising:

a base film (6); and

a plurality of beam leads (7) adjacent the base film having a length and a width, each beam lead including a widthwise wavy portion.

Regarding claim 2, Yoon et al. teach a tape circuit substrate, wherein the base film includes a flexible film (Col. 1, lines 55 – 58; Polyimide is flexible).

Regarding claim 3, Yoon et al. teach a tape circuit substrate, wherein the widthwise wavy portion includes a zigzag widthwise portion.

Regarding claim 4, Yoon et al. teach a tape circuit substrate, wherein the base film has a substantially uniform thickness that follows the contours of the beam leads (See Fig. 2).

Regarding claim 6, Yoon et al. teach a semiconductor chip package (Figs. 2 and 4) comprising:

an integrated circuit chip (1) including a plurality of chip pads (3) on a top surface thereof; and

a tape circuit substrate including:

a base film (6/2) having a top surface; and

a plurality of beam leads (7) having a length and a width formed on the top surface of the base film, wherein one end portion of the beam lead extends toward the chip pad from the base film and bonded to the chip pad, and wherein the extended portion of the beam lead has a widthwise wavy portion.

Regarding claim 7, Yoon et al. teach a chip package, wherein the base film includes a flexible film.

Regarding claim 8, Yoon et al. teach a package, wherein the widthwise portion of the beam lead includes a zigzag widthwise wavy portion.

Regarding claims 9 and 35, Yoon et al. teach a package, wherein the widthwise wavy portion includes a neck part, a bent part and an end part.

Regarding claim 15, Yoon et al. teach a package, wherein the other end portion of each beam lead is an external connection terminal.

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Regarding claim 16, Yoon et al. teach a package, wherein an opening (8) is formed on a substantially central portion of the base film so that the chip pads of the integrated circuit are exposed through the opening.

Regarding claim 17, Yoon et al. teach a package, wherein the top surface of the base film (6) faces toward the top surface of the integrated circuit chip.

Regarding claim 18, Yoon et al. teach a package, wherein the top surface of the base film (2) faces the same direction as the top surface of the integrated circuit chip.

Regarding claim 19, Yoon et al. teach a package, wherein the base film (6) covers the top surface of the integrated circuit chip, and the top surface of the base film faces toward the top surface of the integrated circuit chip.

Regarding claim 34, Yoon et al. teach a package comprising:

an integrated circuit chip (1) including a plurality of chip pads (3) formed on a top surface thereof; and

a tape circuit substrate including:

a base film (6) having an opening (8) formed there through, the opening defining an inside edge; and

a plurality of beam leads (7) having a length and a width formed on the base film, wherein each beam lead has a portion extending from the edge of the base film into the opening and wherein the extended portion of each beam lead has a widthwise wavy portion.

Regarding claim 36, Yoon et al. teach a package, wherein the widthwise wavy portion of the beam lead extends straight into the opening at the neck part and bends downward toward the chip pads at the bent part.

Regarding claim 37, Yoon et al. teach a package, wherein the widthwise wavy portion is adapted to move laterally during an inner lead bonding process.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 10 – 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoon et al.

Yoon et al. teach a package, wherein the beam lead has a width of 5 to 20 microns (Col. 4, lines 28 – 34), which is inside of the range of 50 microns or less and overlaps 10 to 30 microns.

Yoon et al. do not teach a package, wherein the neck part has a length of 40 to 80 microns or 55 to 75 microns. Yoon et al. do not teach the bent part having a length in the range of 100 to 500 microns. Yoon et al. is silent with respect to the length of each section. It would have been obvious to one of ordinary skill in the art to arrive at the optimal length through routine experimentation, since it is desirable to produce a device having dimensions that would result in a functional device. Additionally, "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to

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discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 .2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

6. Claims 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoon et al. as applied to claim 6 above, and further in view of US Patent No. 5,744,859 to Ouchida.

Regarding claim 14, Yoon et al. do not teach a package further comprising a sealing resin encapsulating the chip pads and the beam leads. Ouchida teaches a package including a sealing resin (21)

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoon et al. as applied to claim 6 above, and further in view of US Patent No. 6,278,176 to Nakamura et al.

Yoon et al. do not teach a package, wherein the chip further includes a plurality of chip bumps on the chip pads. Nakamura et al. teach a package (Fig. 2), wherein the chip includes a plurality of chip bumps (7) on the chip pads (6a). It would have been obvious to one of ordinary skill in the art to incorporate the teaching of Nakamura et al. into the device taught by Yoon et al. since it is desirable to provide a more secure connection.

#### ***Allowable Subject Matter***

8. Claims 21 – 33, 38 and 39 are allowed.

9. Claims 5 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

10. Applicant's arguments with respect to claims 1 – 20 and 34 – 37 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

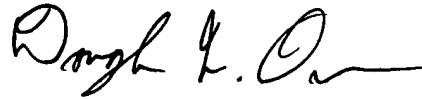
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W. Owens whose telephone number is 571-272-1662. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Douglas W. Owens". The signature is fluid and cursive, with a long horizontal stroke at the end.

Douglas W Owens  
Examiner  
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